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## **Investigation of HIV Infection in the Female Genital Tract in the Absence of Seroconversion**

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## Challenges

- Ordering issues between Western University and Kenyan company providing supplies
- Ordered supplies took very long to arrive. For example, it was quicker to order some supplies in Canada and ship them to Uganda than to order them in Africa
- Difficulty in upholding weekly video calls with lab in different time zone
- Four month time restraint in Uganda combined with delay of supplies reduced our available working time in half
- Sharing of limited laboratory resources often restricted the amount of work that could be completed



## Recommendations

- Order project supplies well in advance of arrival at host organization. Alternatively, have host organization order supplies on our behalf to avoid shipment delays
- Maintain weekly video call meetings with project supervisor in Canada. This will ensure that any issues that arise are dealt with as soon as possible
- Allocate additional time to the study period in case of unforeseen issues such as shipment delays
- Invest in the Joint Clinical Research Centre to purchase more laboratory equipment

# Investigation of HIV infection in the female genital tract in the absence of seroconversion

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May – August 2017

## Project Background

- We conducted our research at the Joint Clinical Research Centre (JCRC), located in Lubowa, Uganda
- It is currently believed that once a HIV infection is established at the mucosal level, an ensuing systemic infection is certain to follow
- The transmission rate of HIV through receptive vaginal intercourse is estimated to be 0.08% (roughly every 1 in 1000 sexual encounters with an HIV-positive person resulting in infection)
- In some cases, female commercial sex workers have cytokine patterns in their genital tract that are associated with protection against HIV-1 infection
- **We predict that HIV infection in the female genital tract may occur in the absence of systemic infection in some individuals**

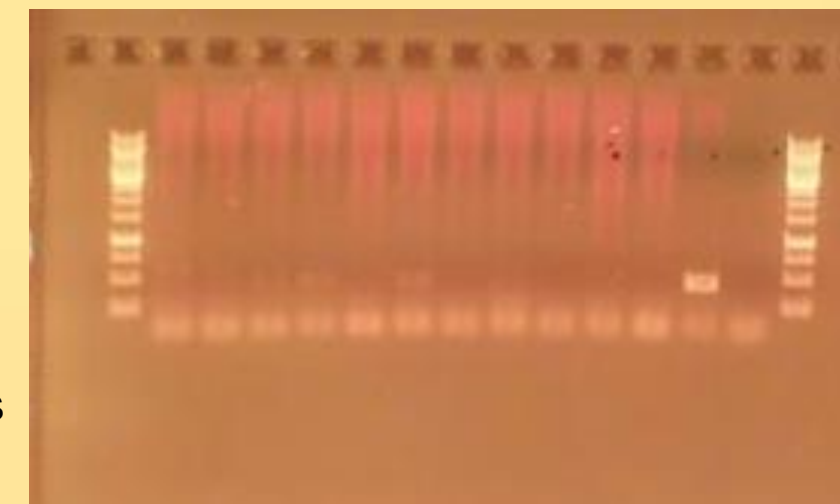


## Project Goals

1. To investigate whether HIV infection may occur in the female genital tract in the absence of systemic infection in some individuals
2. Screen endocervical swab samples isolated from HIV-negative Ugandan and Zimbabwean women for the presence of HIV

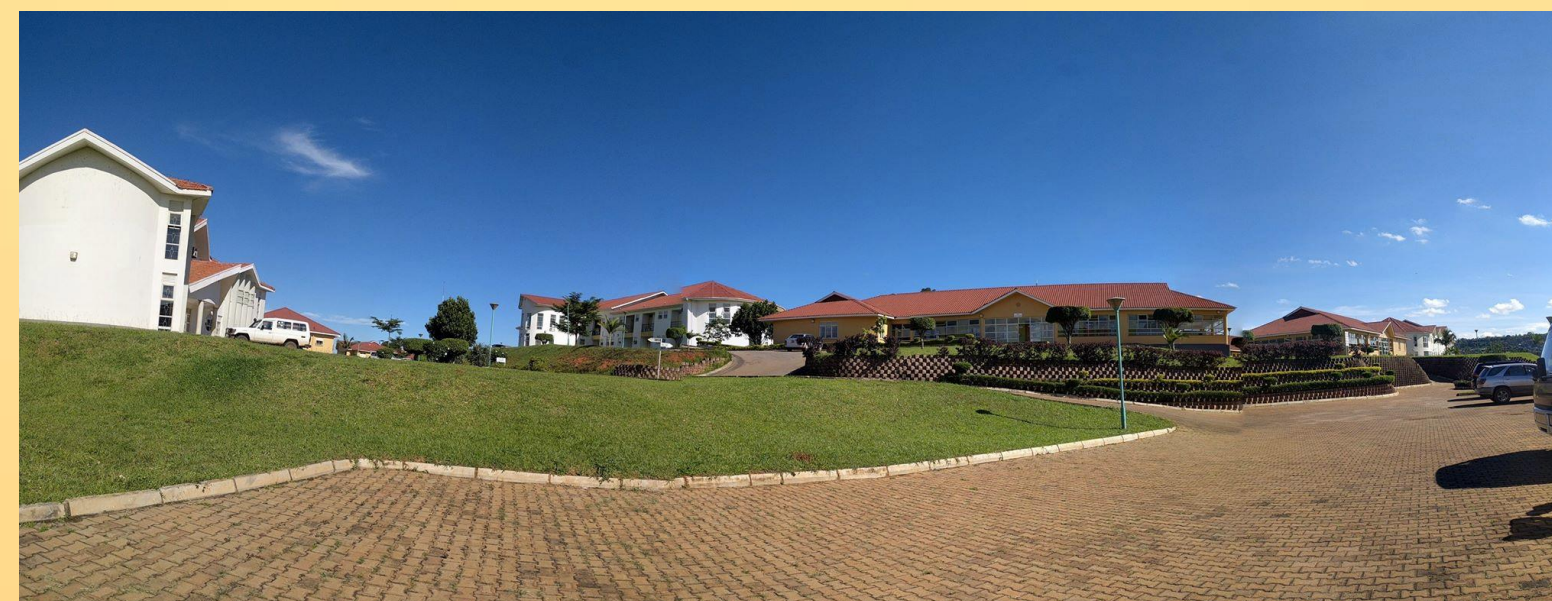
## Project Activities and Outcome

- Pooled 1000 patient endocervical swab samples into groups of 10 prior to analysis to:
  - Streamline time required for analysis
  - Reduce the amount of resources required
- Extracted and screened viral RNA for a portion of the HIV-1 gag gene via reverse transcription polymerase chain reaction and DNA gel electrophoresis
- Communicated with Arts laboratory on a weekly basis to discuss progress and troubleshoot project issues
- **To date, of the 1000 screened endocervical swabs, we identified 14 pools as HIV-positive**



## Future

- Screen roughly 2000 more endocervical samples from HIV-negative women for the presence of HIV
- Sequence virus identified from samples via Sanger sequencing and analyze for common patterns and mutations
- Perform an analysis of the cytokines present in the endocervical swabs and compare with that of HIV-negative and systemically HIV-positive women



## Personal Impact

- Research conducted in the summer has elucidated that both time management and organizational skills will be absolutely essential to the success of the project
- Conducting HIV research in Uganda versus Canada was an incredible experience that has irrevocably shaped our views of HIV. Working in a country that has been devastated by HIV has strengthened our drive to battle the advancing epidemic
- Witnessing a 'wicked problem' first hand has instilled a newfound appreciation for the importance of understanding not just scientific knowledge of HIV, but also the social, political, and environmental factors surrounding HIV in order to effectively combat the epidemic to the best of our ability



## Project Impacts

- Our preliminary results suggest that HIV infection contained in the female genital tract in the absence of systemic HIV infection may occur
- These results provide the confidence required to pursue this project on a larger scale and increase funding for its continuation
- This novel discovery may lead to increased knowledge on HIV transmission and impact scientific advancement in regards to the HIV epidemic